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EXAMINER				
LOEWE, ROBERT S				
ART UNIT		PAPER NUMBER		
1796				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/578,178

Applicant(s)

LICHT ET AL.

Examiner

ROBERT LOEWE

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 and 21 is/are rejected.
- 7) ☒ Claim(s) 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Applicant's arguments/remarks, filed on 5/6/08, have been fully acknowledged.

Claim Objections

Claim 11 is objected to because heteroatom is misspelled.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-19 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, independent claims 1 and 6 recite an aqueous polyurethane dispersion. Claims 1 and 6 also recite that R⁵ and R⁶ may be OH, SH, NH₂, or NHR⁷. When R⁵ and R⁶ is SH, NH₂, or NHR⁷, the resulting polymer would not be a polyurethane but instead a polyurea (in the case when R⁶ and/or R⁷ is NH₂ or NHR⁷), or a polythiourethane (in the case when R⁶ and/or R⁷ is SH). Appropriate correction is required.

Claim Rejections - 35 USC § 102

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-5 and 9 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Reusmann et al. (US patent application publication 2003/0198819).

Claims 1 and 2: Reusmann et al. teaches an aqueous dispersion of a polysiloxane polyurethane which is obtained by reacting polyisocyanates and isocyanate-reactive compounds; the isocyanate-reactive compounds comprising a polysiloxane having the structural limitations of formula I of instant claim 1 and of instant claim 2 (abstract and paragraph 0036). While Reusmann et al. does not teach that the polyurethane dispersion is obtained by a reaction of the corresponding polyurethane starting components in an aqueous miniemulsion, patentability is based on the product itself.

Claim 3: Reusmann et al. further teaches an aqueous dispersion wherein the polyurethane has been synthesized from (a) polyisocyanates (paragraph 0096), (b1) 100 mol%, based on the total amount of the polyols (b) of a polysiloxane polyol (paragraph 0095), and (c) dimethylolpropionic acid (paragraph 0095), which is a monomer having groups which are reactive toward isocyanate groups.

Claim 4: Example 1 of Reusmann et al. teaches that the polyurethane comprises about 10% by weight polysiloxanes of formula I of instant claim 1 (84 g polyester + 24 g siloxane polymer + 105.7 g of isocyanate + 16.8 g of DMPA + 12 g of butanediol = 243 g total of which 24 g is polysiloxane) (paragraphs 0095-0096).

Claim 5: Reusmann et al. further teaches that the aqueous dispersion further comprises additional polymers (paragraph 0073).

Claim 9: Reusmann et al. further teaches a method of making a coating using the aqueous dispersion of instant claim 1 (paragraph 0088).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 13-16 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Licht et al. (WO 02/064657) in view of Reusmann et al. (US patent application publication 2003/0198819). For convenience, the English language equivalent of WO 02/064657 (US 2004/0077777) will be relied upon.

Claims 1, 2 and 13-16: Licht et al. teaches an aqueous polyurethane dispersion (abstract), which is obtained by reacting polyisocyanates and isocyanate-reactive compounds in miniemulsion (abstract). The isocyanate-reactive compounds preferably include diols (paragraph 0021) having a molecular weight of from 500 to 5000 g/mol (paragraph 0022) and can include

polysiloxanes (paragraph 0028). Licht et al. therefore teaches that a polysiloxane diol having a molecular weight of from 500 to 5000 g/mol may be used.

Licht et al. does not explicitly teach that the polysiloxane satisfies the structural limitations of formula I of instant claim 1. However, Reusmann et al. teaches such polysiloxanes diols having the same molecular weights as taught by Licht et al. (paragraph 0033) and further teaches the same polysiloxane diols as those of the instant application (Tegomer 2111 and Tegomer 2311, paragraph 0036). Licht et al. and Reusmann et al. are combinable because they are from the same field of endeavor, namely, polysiloxane-polyurethane aqueous dispersions. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the polysiloxanes as taught by Reusmann et al. into the aqueous miniemulsions taught by Licht et al. and would have been motivated to do so because Reusmann et al. teaches that the polysiloxanes diols in aqueous polyurethane dispersions are a critical ingredient which imparts a good soft feel effect without the need for additional flattening agents (paragraphs 0006-0007 and example 1 and comparative example 1). Reusmann et al. further teaches that polysiloxane-polyurethane dispersions can serve as components in a variety of applications, including serving as a binder component in elastic coatings and sealants and a release and antistick coatings (paragraphs 0088-0090).

Claim 3: Licht et al. further teaches an aqueous dispersion wherein the polyurethane is prepared from (a) polyisocyanates (paragraphs 0017-0019), (b) polyols of which (b1) 10 to 100 mol%, based on the total number of polyols (b) have a molecular weight of from 240 to 5000 g/mol (paragraphs 0027 and 0032) and (b2) 0 to 90 mol%, based on the total amount of polyols (b), have a molecular weight of from 62 to 500 g/mol (paragraph 0029 and 0032), and further

comprise (c) monomers which are reactive toward isocyanate groups such as non-functional hydroxyl-containing and amino-containing monomers (paragraph 0035). The hydroxyl and amino groups are inherently hydrophilic.

Claim 4: Licht et al. further teaches that the polyol (which can include polysiloxane diols) is present in the composition in amounts which satisfy the range of instant claim 4 (Table 1).

Claim 5: Licht et al. further teaches that the aqueous dispersion further comprises additional protective colloids or stabilizers which include surfactants such as polymeric fatty alcohols (paragraph 0056).

Claim 6: Licht et al. further teaches a process for preparing an aqueous polyurethane dispersion comprising: reacting polyisocyanates and isocyanate-reactive compounds in aqueous miniemulsion (abstract), whereby the isocyanate-reactive compounds comprise polysiloxane diols (paragraph 0028) to obtain an aqueous polyurethane dispersion. Licht et al. therefore teaches that a polysiloxane diol having a molecular weight of from 500 to 5000 g/mol may be used.

Licht et al. does not explicitly teach that the polysiloxane satisfies the structural limitations of formula I of instant claim 1. However, Reusmann et al. teaches such polysiloxanes diols having the same molecular weights as taught by Licht et al. (paragraph 0033) and further teaches the same polysiloxane diols as those of the instant application (Tegomer 2111 and Tegomer 2311, paragraph 0036). Licht et al. and Reusmann et al. are combinable because they are from the same field of endeavor, namely, polysiloxane-polyurethane aqueous dispersions. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ the polysiloxanes as taught by Reusmann et al. into the aqueous miniemulsions taught by

Licht et al. and would have been motivated to do so because Reusmann et al. teaches that the polysiloxanes diols in aqueous polyurethane dispersions are a critical ingredient which imparts a good soft feel effect without the need for additional flattening agents (paragraphs 0006-0007 and example 1 and comparative example 1). Reusmann et al. further teaches that polysiloxane-polyurethane dispersions can serve as components in a variety of applications, including serving as a binder component in elastic coatings and sealants and a release and antistick coatings (paragraphs 0088-0090).

Claim 7: Licht et al. further teaches that the miniemulsion process produces droplet sizes preferably ranging from 40 to 1000 nm, which encompasses the claimed range of instant claim 7 (paragraph 0038).

Claim 8: Licht et al. further teaches that the polyol component (b1), which includes polysiloxane diols, is prepared by reaction of their starting compounds during the preparation of the miniemulsion (paragraph 0062).

Claim 9: Licht et al. further teaches a method of making a coating using the aqueous dispersion of instant claim 1 (0060 and claim 20 therein).

Claim 10: Licht et al. does not explicitly teach that the compositions may be used as foam stabilizers. However, since Licht et al. does explicitly teach aqueous dispersions meeting the structural requirements of claim 1, it follows that such dispersions can inherently be used in the form of a foam stabilizer.

Claim 21: Licht et al. teaches that the particle size of the emulsified droplets preferably ranges from 40 to 1000 nm, which encompasses the claimed range of instant claim 7 (paragraph 0038).

Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Licht et al. (WO 02/064657), in view of Reusmann et al. (US patent application publication 2003/0198819), as applied to claim 1 above, further in view of Kim et al. (US Pat. 6,932,964).

Licht et al., in view of Reusmann et al. collectively teach an aqueous dispersion obtained by miniemulsion of instant claim 1 as described above. Licht et al. does not explicitly teach that R^3-R^6 of the polysiloxanes can further comprise heteroatoms. However, Kim et al. does teach polysiloxanes having such structural limitations (7:43-8:3 and 11:21-54). Such polysiloxanes taught by Kim et al. include those wherein one or more of the pendant groups (R^1 and R^2) contain short poly(alkylene)oxide pendant groups wherein the total number of carbon atoms is less than 20. Kim et al. further teaches that R^3-R^6 can also comprise short poly(alkylene)oxide terminal groups wherein the total number of carbon atoms is less than 20). Licht et al. and Kim et al. are combinable because they are from the same field of endeavor, namely, aqueous dispersions comprising polysiloxanes. At the time of the invention, a person having ordinary skill in the art would have found it obvious to employ polysiloxanes having the heteroatom functionalized groups as taught by Kim et al. into the aqueous dispersions of Licht et al. and would have been motivated to do so because Kim et al. teaches that polysiloxanes comprising heteroatoms are preferred because they are water soluble and water dispersible (11:30-54 and 17:46-48). Licht et al. is concerned with preparing polyurethanes in miniemulsion. It follows

that incorporation of polysiloxanes, like those taught by Kim et al. would be desirable owing to the increased compatibility of the hydrophilic polysiloxane diols with the other ingredients within the aqueous miniemulsion.

Claims 1-10, 17-19 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reusmann et al. (US patent application publication 2003/0198819) in view of Licht et al. (WO 02/064657). For convenience, the English language equivalent US patent application publication 2004/0077777 will be relied upon.

Claims 1, 2, 6-8 and 21: Reusmann et al. teaches an aqueous dispersion of a polysiloxane-polyurethane which is obtained by reacting polyisocyanates and isocyanate-reactive compounds; the isocyanate-reactive compounds comprising a polysiloxane having the structural limitations of formula I of instant claim 1 and of instant claim 2 (abstract and paragraph 0036).

Reusmann et al. does not explicitly teach that the polyurethane dispersion is obtained by a reaction of the corresponding building blocks in an aqueous miniemulsion. However, Licht et al. does teach an aqueous dispersion of a polyurethane which is obtained by emulsion polymerization of polyisocyanates and isocyanate-reactive compounds [including polysiloxane diols (paragraph 0028)] (abstract). Licht et al. further teaches that the aqueous dispersions are obtained by miniemulsion techniques (paragraphs 0062-0063). Licht et al. further teaches that the particle sizes of such dispersions are between 40-1000 nm (paragraph 0038). Reusmann et al. and Licht et al. are combinable because they are from the same field of endeavor, namely, aqueous dispersions of polyurethanes. At the time of the invention, a person having ordinary skill in the art would have found it obvious to prepare the polyurethane compositions of

Reusmann et al. using the process of miniemulsion as taught by Licht et al. and would have been motivated to do so because Licht et al. teaches that polyurethane dispersions prepared directly from the raw materials using a miniemulsion process has both an economic and environmental benefit compared to aqueous dispersions which rely on polyurethane prepolymers and polyurethane polymers (i.e., post polymerization dispersion) (paragraph 0010).

Claim 3: Reusmann et al. further teaches an aqueous dispersion wherein the polyurethane has been synthesized from (a) polyisocyanates (paragraph 0096), (b) 100 mol%, based on the total amount of the polyols (b) of a polysiloxane polyol (paragraph 0095), and (c) dimethylolpropionic acid (paragraph 0095), which is a monomer having a hydrophilic group and is reactive toward isocyanate groups.

Claim 4: Example 1 of Reusmann et al. teaches that the polyurethane comprises about 10% by weight polysiloxanes of formula I of instant claim 1 (84 g polyester + 24 g siloxane polymer + 105.7 g of isocyanate + 16.8 g of DMPA + 12 g of butanediol = 243 g total of which 24 g is polysiloxane) (paragraphs 0095-0096).

Claim 5: Reusmann et al. further teaches that the aqueous dispersion further comprises additional polymers (paragraph 0073).

Claim 9: Reusmann et al. further teaches a method of making a coating using the aqueous dispersion of instant claim 1 (paragraph 0088).

Claim 10: Reusmann et al. does not explicitly teach that the compositions may be used as foam stabilizers. However, since Reusmann et al. does explicitly teach aqueous dispersions

meeting the structural requirements of claim 1, they can inherently be used in the form of a foam stabilizer.

Claim 17: Reusmann et al. further teaches additional components other than monomers (a) to (c) comprising at least two isocyanate groups, of which at least one group is a primary amine (paragraph 0055).

Claim 18: Reusmann et al. further teaches additional components other than monomers (a) to (d) comprising a reactive group which is an alcoholic hydroxyl group (paragraph 0058).

Claim 19: Reusmann et al. further teaches incorporation of other aqueous binders including polyacrylate resins (paragraph 0073). Whether or not such polyacrylate resins are prepared via free radical polymerization or by some other technique, for product-by-process claims, patentability is based on the product itself.

Response to Arguments

Applicant's arguments have been fully considered but they are not persuasive.

Applicant's arguments regarding claims 1-5 and 9 (previously indicated as claims 1, 2, 4, 5 and 9 on the previous Office action) is not persuasive since there is nothing presented in claims 1-5 and 9 which distinguishes the aqueous dispersions as taught by Reusmann et al. and those taught in the instant application. For product-by-process claims, patentability is directed toward the product itself. Applicant's need to show that the aqueous dispersions prepared according to the instant application are inherently different than those prepared by Reusmann et al.

Applicant's arguments regarding claims 1-5, 9, 10 and 17-19 (Reusmann et al. in view of Licht) are not persuasive. Applicants argue that Reusmann et al. provides disincentive for a person having ordinary skill in the art to look toward the miniemulsions of Licht et al. because Reusmann et al. teaches the incompatibilities of high molecular weight polydimethylsiloxane diols with the organic reaction components. However, there is no disincentive provided by Reusmann et al. for lower molecular masses below 1,500 g/mol which satisfy the structural limitations of formula I of the instant claims. Further, and more importantly, Licht et al. explicitly teaches that siloxane diols having molecular weights of from 500 to 5,000 may be employed as starting materials for the aqueous primary dispersions taught by Licht et al. (paragraphs 0022 and 0028). Because Licht et al. explicitly teaches polysiloxane diols having molecular weights of from 500 to 5,000 g/mol can be used as starting materials in the aqueous primary dispersions, there would be an expectation of success to employ the process of Licht et al. using the polysiloxanes taught by Reusmann, which are taught to be polysiloxane diols having the same molecular weight range.

Applicants have not presented valid arguments regarding claims 6-8 since such arguments are not applicable in the 103 rejection of Licht in view of Reusmann. In such a case, Reusmann is brought in as a secondary reference to satisfy the limitations of the polysiloxane structure [formula (I)] of instant claim 1. Arguments directed to the combination of these two references regarding the fact that Licht teaches primary emulsions and Reusmann teaches secondary emulsions does not apply here. The Examiner also incorporated Licht in view of Reusmann to address claims 1-5, 9-10, 13-16 and 21 using the same grounds of rejection (i.e., Licht in view of Reusmann) (vide supra).

Applicants further argue that claims 13-16 should be found allowable owing to the deficiencies of the combination of Licht et al. in view of Reusmann. However, such arguments regarding the combination of Licht et al. in view of Reusmann are not found to be persuasive as described above.

Applicant's arguments regarding claims 11 and 12 are found to be persuasive. Krankenberg et al. does not effectively satisfy the limitations of instant claims 11 and 12 and is no longer relied upon as a prior art reference. However, Kim et al., which was relied upon in the previous Office action to reject claims 13-16, is now relied upon as a prior art reference for instant claims 11 and 12 (in addition to instant claims 13-16).

This Office action is non-final owing to the new grounds of rejection cited above.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Loewe whose telephone number is (571) 270-3298. The examiner can normally be reached on Monday through Friday from 5:30 AM to 3:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Eashoo can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/R. L./

Examiner, Art Unit 1796

4-Jun-08

/Randy Gulakowski/

Supervisory Patent Examiner, Art Unit 1796